



**DUBLIN, VIRGINIA  
COURSE PLAN**

**Course Number and Title:** MTH 131-Technical Mathematics

**Prepared by:** NRCC Math Faculty Fall 2025  
(Date)

**Approved by:** S. Tolbert-Hungry Fall 2025  
(Dean) (Date)

**Course Description**

Presents algebra through unit conversion, trigonometry, vectors, geometry, and complex numbers. This course is intended for CTE programs.

Lecture 3 hours. Total 3 hours per week.

3 credits

**Introduction**

**Student Learning Outcomes**

Upon successful completion of this course, the student will be able to:

Use a scientific calculator

- Round-off numbers correctly
- Identify significant digits
- Use scientific notation
- Understand/use line and angle relationships
- Understand/use terms related to an angle(s)
- Classify triangles by their sides/angles.
- Calculate the perimeter of a polygon
- Calculate the circumference of a circle
- Calculate the area of a polygon
- Calculate the area of a circle
- Apply concepts of sector and arc length of a circle
- Recognize various geometric solids such as cylinder, cone, pyramid, prism, sphere
- Calculate surface area and volume of various geometric solids
- Understand/use the concept of similar triangles
- Know/apply the fact that  $180^\circ = \pi$  radians
- Define the trigonometric functions and their values
- Solve right triangles and their applications
- Understand the signs of the trigonometric function of angles greater than  $90^\circ$
- Determine trigonometric functions of any angle
- Solve problems using radian measure and its applications
- Understand vectors and their components
- Solve applications involving vectors
- Solve oblique triangles using law of sine and/or law of cosines
- Understand complex numbers and their basic operations

- Convert between forms of rectangular, polar, and exponential complex numbers

### **General Education Student Learning Outcomes Included in Course**

General education at NRCC provides the educational foundation necessary to promote intellectual and personal development. Upon completing the associate degree, graduates will demonstrate competency in student learning outcomes in 1) civic engagement, 2) critical thinking, 3) professional readiness, 4) quantitative literacy, 5) scientific literacy, and 6) written communication.

This course includes the following general education student learning outcomes:

- Communication
  - Interpret and communicate quantitative information and mathematical and statistical concepts using language appropriate to the context and intended audience.
- Problem Solving
  - Make sense of problems, develop strategies to find solutions, and persevere in solving them.
- Reasoning
  - Reason and draw conclusions or make decisions with quantitative information.
- Evaluation
  - Critique and evaluate quantitative arguments that utilize mathematical, statistical, and quantitative information.
- Technology
  - Use appropriate technology in a given context.
- Students will engage in all course content described below in context to the technical fields being supported.
- Basic Skills
  - Use a scientific calculator.
  - Round-off numbers correctly.
  - Identify significant digits.
  - Use scientific and engineering notation
  - Convert between units in both standard and metric
  - Apply basic algebraic principles
- Geometry
  - Apply and interpret line and angle relationships.
  - Classify triangles by their sides/angles.
  - Calculate the perimeter of a polygon
  - Calculate the circumference and chord length on a circle
  - Calculate the area of a polygon
  - Calculate the area of a circle
  - Apply concepts of sector and arc length of a circle
  - Recognize various geometric solids such as cylinder, cone, pyramid, prism, sphere and conic sections.
  - Calculate surface area and volume of various geometric solids
  - Apply the concept of similar triangles
- Trigonometry
  - Properly use terms related to an angle(s).
  - Classify triangles by their sides/angles.

- Know/apply the radian as a measure of an angle, convert between degrees and radians
- Define the trigonometric functions and their values
- Solve right triangles and their applications
- Identify the signs of the trigonometric function of angles greater than 90?
- Determine trigonometric functions of any angle
- Vectors
  - Describe vectors and their components.
  - Solve applications involving vectors.
  - Perform addition and scalar multiplication with vectors
- Complex Numbers
  - Interpret complex numbers and perform basic operations
  - Convert between forms of rectangular, and polar complex numbers
  - Perform basic operations with polar complex numbers

### **Instructional Methods**

Lecture and in-class activities

### **Instructional Materials**

Text & Edition: Technical Mathematics Author: Travis Coake \*\*Offered free via pdf. Links provided in Canvas and MyOpenMath.

Calculator: The TI-30XII, TI-30XIIS, or TI36X Pro are recommended and are the only calculators permitted for use on proctored tests

### **Course Content**

- Basic Skills
- Geometry
- Trigonometry
- Vectors
- Complex Numbers

### **Grading/Evaluation**

Students are evaluated on the following and other work as considered appropriate by the instructor:

- *class attendance, participation, and discussion*
- *assignments*
- *quizzes*
- *tests*
- *final exam*

See the course syllabus for details on how grades for this course will be calculated using percentages or points.

Grading scale:

90 - 100 = A

80 - 89 = B

70 - 79 = C  
60 - 69 = D  
Below 60 = F

### **Attendance**

Regular attendance at classes is required. When absence from a class becomes necessary, it is the responsibility of the student to inform the instructor prior to the absence whenever possible. The student is responsible for the completion of all study missed during an absence. Any instruction missed and not completed will affect the grade of the student regardless of the reason for the absence.

### **Cheating/Plagiarism Policy**

*This policy can be developed at the department level. Below is an example.*

Students are expected to complete their own work and maintain complete academic honesty. Honesty develops into integrity. All aspects of the course are covered by the Academic Honesty section in the New River Community College Student Handbook.

Any student found cheating or plagiarizing will receive a zero for that work and it could result in an "F" for the course. This includes plagiarism, which is defined as "To present another's words or ideas as one's own or without attribution" (American Heritage Dictionary, 2019). Remember that plagiarism includes using words or ideas from Internet sites, as well as copying from print sources.

### **AI Usage**

Different instructors will have different expectations around students' usage of artificial intelligence (AI) tools depending upon the goals and learning outcomes of a course. Students should refer to the class syllabus/addendum for more specific guidelines. It is important to understand that using unauthorized AI tools to complete course work may result in an academic honesty violation. Students should always ask their instructor for guidance if they have any questions about the appropriateness of using a tool.

### **Withdrawal Policy**

#### **Student Initiated Withdrawal Policy**

A student may drop or withdraw from a class without academic penalty during the first 60 percent of a session. For purposes of enrollment reporting, the following procedures apply:

If a student withdraws from a class prior to the termination of the add/drop period for the session, the student will be removed from the class roll and no grade will be awarded.

After the add/drop period, but prior to completion of 60 percent of a session, a student who withdraws from a class will be assigned a grade of "W." A grade of "W" implies that the student was making satisfactory progress in the class at the time of withdrawal, that the withdrawal was officially made before the deadline published in the college calendar, or that the student was administratively transferred to a different program.

After that time, if a student withdraws from a class, a grade of "F" or "U" will be assigned. Exceptions to this policy may be made under documented mitigating circumstances if the student was passing the course at the last date of attendance.

A retroactive grade of "W" may be awarded only if the student would have been eligible under the previously stated policy to receive a "W" on the last date of class attendance. The last date of attendance for a distance education course will be the last date that work was submitted.

Students requesting a late withdrawal due to documented mitigating circumstances should contact the Coordinator of Admissions and Records.

### **No-Show Policy**

A student must either attend face-to-face courses or demonstrate participation in online courses by the last date to drop for a refund. A student who does not meet this deadline will be reported to the Admissions and Records Office and will be withdrawn as a no-show student. No refund will be applicable, and the student will not be allowed to attend/participate in the class or submit assignments. Failure to attend or participate in a course will adversely impact a student's financial aid award.

### **Instructor Initiated Withdrawal**

A student who adds a class or registers after the first day of class is counted absent from all class meetings missed. Each instructor is responsible for keeping a record of student attendance (face-to-face classes) or performance/participation (online classes) in each class throughout the semester.

When a student's absences equal twice the number of weekly meetings of a class (equivalent amount of time for summer session), the student may be dropped for unsatisfactory attendance in the class by the instructor.

Since attendance is not a valid measurement for online courses, a student may be withdrawn due to non-performance. A student should refer to his/her online course plan for the instructor's policy.

In accordance with the No-Show Policy, a student who has not attended class or requested/accessed online learning materials by the last day to drop the class and receive a refund must be withdrawn by the instructor during the following week. No refund will be applicable.

When an instructor withdraws a student for unsatisfactory attendance (face-to-face class) or non-performance (online class), the last date of attendance/participation will be documented. Withdrawal must be completed within five days of a student's meeting the withdrawal criteria. A grade of "W" will be recorded during the first sixty percent (60%) period of a course. A student withdrawn after the sixty percent (60%) period will receive a grade of "F" or "U" except under documented mitigating circumstances when a letter of appeal has been submitted by the student. A copy of this documentation must be placed in the student's academic file.

The student will be notified of the withdrawal by the Admissions and Records Office. An appeal of reinstatement into the class may be approved only by the instructor.

### **Non-Discrimination Statement**

This College promotes and maintains educational opportunities without regard to race, color, national origin, religion, disability, sex, sexual orientation, gender identity, ethnicity,

marital status, pregnancy, childbirth or related medical conditions including lactation, age (except when age is a bona fide occupational qualification), veteran status, or other non-merit factors.

### **Disability Statement**

If you are a student with a disability and in need of accommodations for this course, please contact the Center for Disability Services (CDS) for assistance. CDS is located within the Advising Center in Rooker Hall. For more information about disabilities services, see [Center for Disability Services Policies and Procedures](#).

### **Academic Success Center (Tutoring Center)**

Free tutoring is available to all NRCC students in any subject area. In-person, one-on-one, and group tutoring sessions are available both in Dublin (Godbey 131) and at the mall site (room 202). Online tutoring sessions are also available to accommodate students who are unable to attend an in-person tutoring session. In addition, the Academic Success Center offers several online tutorials which are posted in Canvas on the NRCC Tutoring Services tab. For more information about the Academic Success Center at NRCC, please visit <https://www.nr.edu/asc/> or call 1-540-674-3664.

### **General Health Guidelines and Student Expectations**

In guarding against the transmission of infectious illnesses, it is imperative that we follow specific health-related best practices.

As a condition for attending class or otherwise using NRCC facilities, I, as a student, agree to the following conditions:

I will follow all CDC, state, and local guidelines pertaining to diseases and health conditions. More information can be found at the links below.

- a CDC Diseases and Conditions: <https://www.cdc.gov/nchs/fastats/diseases-and-conditions.htm>
- b Virginia Department of Health: <https://www.vdh.virginia.gov/>
- c New River Health District: <https://www.nrvroadtowellness.com/>

In the event of health threats or changes in guidelines, I understand in-person classes may be moved online, fully or partially, and I will need to be prepared to access technology and the internet with as little as 24 hours' notice.

By continuing my enrollment in class(es), **I agree to meet each of the expectations outlined above.**

New River Community College encourages all students to fully vaccinate against transmissible illnesses. Information about vaccinations can be found on the Virginia Department of Health website at [www.vdh.virginia.gov](http://www.vdh.virginia.gov).

### **Required Safety Training**

Virginia law, effective August 1, 2024, requires campus safety and emergency preparedness training for all students enrolled in on-campus classes at public colleges and universities. The training must focus on an active shooter event and be completed by the

last day of their first term in college.

To comply with this legislation, students will view a college-provided awareness and training video during the first two weeks of class for this course.

### **Evacuation Procedure**

Please note the evacuation route posted at the classroom doorway. **Two routes are marked in case one route might be blocked.**